Stellar Irradiance Variations

Richard R. Radick
Air Force Research Laboratory, Sunspot, NM, USA

The variability of several stars similar to the Sun in mass, age, and average activity has been monitored regularly in chromospheric Ca II HK emission for over three decades, and photometrically for over fifteen years. Larger samples have been observed less comprehensively. Analogous solar time series exist. A comparison of solar variability with its stellar analogs indicates that the Sun's current behavior is not unusual among sunlike stars, although some observations suggest that the amplitude of the Sun's cyclic variation, measured photometrically, may be smaller than for other sunlike stars. The stellar measurements imply that a true luminosity variation underlies the cyclic irradiance changes. The amplitude discrepancy remains a vexing problem, although an irradiance effect arising from viewing geometry may account for part of it.